

# Tree Fruit Aphids

March, 2016

## Apple Aphid (*Aphis pomi*)

### Hosts

Apple and pear

### Damage

**Leaves** - Terminal leaves are curled downward and sticky with honeydew secreted by the aphids.

**Fruit** - Honeydew may drip onto the fruit causing russet spots and promote growth of black sooty mold.

**Shoots** - Highly infested shoots of young trees are stunted or malformed.



*Apple aphids*

### Identification

**Egg** - Oval, shiny black.

**Immature** - Dark green with black legs, wingless.

**Adult** - Yellowish-green to light green, winged or wingless.

### Life History

The apple aphid overwinters in the egg stage on water sprouts and terminals. Eggs tend to be concentrated on a few trees in a planting. Hatching begins as apple buds open in spring. Aphids feed on flower parts and then move to growing shoots. Females produce many generations during the summer and disperse throughout the orchard and to other orchards. Males appear in the fall and mate with the females that then lay overwintering eggs.

### Monitoring

Infestations on the terminal 7-10 leaves of 50% of shoots of mature trees in a block can cause fruit damage. Inspect young bearing and non-bearing trees for increasing aphid populations and restricted tree growth.

### Control

**Cultural** - Avoiding excessive nitrogen application will limit aphid populations by reducing succulent growth that is attractive to aphids.

**Biological** - Predators (ladybird beetles, lacewings, syrphid flies and predatory midges) and parasitic wasps are usually capable of providing control of apple aphid on bearing trees and often on young trees. Avoid using pesticides toxic to these beneficial insects once they appear on the trees.

**Chemical** - An application of dormant oil will kill many overwintering aphid eggs and will not affect aphid predators. Apply Alias, Admire, Assail, Malathion, Closer, Clutch, Beleaf, Diazinon, Exirel or TwinGuard if few predators are present, aphid populations are increasing and fruit damage appears imminent. Sprays applied before this level of aphid infestation may destroy beneficial insects and result in the need for additional sprays. Assail applied when codling moth is laying eggs will aid in codling moth control. Apply Movento when sufficient leaf tissue is present to allow for maximum uptake of the active ingredient by the plant. Movento should be applied in combination with a recommended non-ionic adjuvant (e.g. Agral 90). Movento is slow-acting so allow 12 – 18 days for noticeable decline in aphid populations.

**NOTE:** The sprays listed above will also control other aphids; Alias, Admire or Assail will also control leafhoppers. Research shows that neonicotinoid products such as Alias, Admire and Assail may increase mite populations. Therefore do not apply more than two applications of Alias, Assail or Admire either alone or alternately per season regardless of target pest (codling moth, aphids, leafhoppers, leafminers) to avoid possible mite flare-up.

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## Apple Grain Aphid (*Rhopalosiphum fitchii*)

### Hosts

Apple, pear, quince, plum, chokecherry, hawthorn, dogwood, grasses.

### Damage

On rare occasions may cause fruit injury similar to that caused by apple aphid.

### Identification

**Egg** - Shiny black, oval.

**Immature** - Initially dark green, becoming lighter green; up to 1.8 mm long.

**Adult** - Light green with a dark green stripe down the back, light coloured legs, 2 mm long.

### Life History

Overwintering eggs on upper twigs and branches hatch when buds open in the spring. There are several generations produced before winged adults appear and move to grasses and grains for the summer. In the fall, adults return to apples and produce a generation that lays overwintering eggs.

### Monitoring

Inspect trees in the spring to identify the aphid species present.



Apple Grain aphids.



Apple fruitlets distorted by apple grain aphid feeding

## Control

Chemical control is rarely needed. Apple grain aphids attract predators that remain to feed on later-appearing aphid species.

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## Rosy Apple Aphid (*Dysaphis plantaginea*)

### Hosts

Apple, pear, narrow-leaf plantain, dock.

### Damage

**Leaves** - Tightly curled on spur growth and at base of shoots; usually much honeydew present within the curled leaf and on adjacent lower leaves. The aphids do not hide under a cottony wax-like covering and do not attack twigs or branches like woolly apple aphids.

**Branches** - Young shoots twisted and deformed.

**Fruit** - Small and deformed near infested leaves; Jonagold fruit is especially sensitive to aphid feeding (dimpled fruit surface with green spots throughout flesh).



*Jonagold apples damaged by rosy apple aphid*



*Rosy apple aphid damage*

### Identification

**Egg** - Dark greenish to shiny black, oval.

**Nymph and adult** - Pink to purplish, up to 2 mm long, coated with a very fine white powder-like covering. Some adults have wings.

### Life History

Rosy apple aphid overwinters as eggs on 2-year-old or older wood. Eggs hatch when buds open in the spring. After several generations, winged adults migrate to plantain for the summer. Winged adults return to apple in the fall where they lay overwintering eggs.

### Monitoring

Examine 10 bud or fruit clusters per tree on 10 standard trees per block or 5 clusters per tree on 20 dwarf trees per block, beginning at tight cluster.



*Rosy apple aphid colony*

## Control

**Chemical** - See apple aphid. Control may be necessary if aphids are present on 10 of 100 bud or fruit clusters in a 100-cluster sample and few predators are present. Pre-bloom control is most effective in preventing fruit injury. The tight cluster spray of oil plus Diazinon will also control European red mite. Summer sprays will also control other aphids. Assail and Admire will also control leafhoppers. Recommended control timing and products include:

Timing	Products
Tight cluster	Diazinon plus dormant oil
Pink	Actara or Assail
Summer	Alias, Admire, Assail, Closer, Clutch, Beleaf, Diazinon, Exirel, Malathion, Movento, TwinGuard

Research shows that neonicotinoid products such as Alias, Assail and Admire are toxic to mite predators and may cause an increase in mite populations. Do not apply more than two applications of Alias, Assail or Admire either alone or alternately per season regardless of target pest (codling moth, aphids, leafhoppers, leafminers) to avoid possible mite flare-up. Assail applied when codling moth is laying eggs or larvae are hatching will aid in codling moth control.

## Woolly Apple Aphid (*Eriosoma lanigerum*)

### Hosts

Apple, pear, hawthorn, mountain ash, cotoneaster.

### Damage

**Twigs and branches** - Aphids colonize around wounds on scaffold limbs, on twigs and water sprouts. Colonies can also cause galls on twigs and the bark to crack. Perennial canker disease pathogens can infect wounds.

**Fruit** - Honeydew may drip on the fruit causing russet spots and blackened lenticels.

**Roots** - Feeding causes galls or swollen enlargements on roots, and heavy infestations can reduce growth or cause death of nursery stock. The root colonies on bearing trees cause re-infestations each year. Colonies can be a nuisance to pickers as the crushed aphid bodies stain skin and clothing.

### Identification

Woolly apple aphids are reddish to brown in colour, up to 2 mm long and covered with a cottony-like white wax. They do not infest leaves. When squashed they leave a red residue.

### Life History

Adults overwinter on the roots and in protected sites on the tree. In the spring young aphids crawl to new sites. There are several generations per year. Dispersion between trees occurs by wind or birds.

### Monitoring

Inspect trees in August to see if infestation is general and severe enough to threaten fruit. No treatment thresholds have been established for woolly apple aphids. Begin monitoring in midsummer or earlier during mild winters.

### Control

**Cultural** - Treat perennial cankers. Remove suckers in summer to eliminate a source of population development. Prune out water sprouts in August; paint large pruning cuts with commercial pruning paint to discourage aphid populations.



Woolly Apple Aphid on beating board



Woolly Apple Aphid close-up



*Woolly Apple Aphid colony*

**Biological** - Several predators (lady beetles, syrphid flies, green lacewings, earwigs) and a parasite *Aphelinus mali* play an important role in woolly apple aphid control.

**Chemical** - See green apple aphid. Field reports indicate Assail and Admire do not provide satisfactory control of woolly apple aphid. Research from Washington State University shows diazinon or Movento provide satisfactory summer control of woolly apple aphid. When the aphids begin to appear on the trunks of trees in the spring, apply diazinon plus dormant oil to the trunks in sufficient volume to ensure thorough coverage of the trunks and lower limbs.

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## **Black Cherry Aphid (*Myzus cerasi*)**

### **Hosts**

Sweet and sour cherries.

### **Damage**

**Leaves**- Terminal leaves curled inwards (sweet cherry only); much honeydew present within the curled leaf and on adjacent lower leaves. Severely infested leaves turn brown and drop.

**Branches**- Young shoots twisted and deformed; growth of young trees slowed.

**Fruit**- Honeydew on fruit supports growth of sooty mold, rendering fruit unmarketable. Fruit size can be reduced under heavy pest pressure.

### **Identification**

**Egg** - Shiny black, oval.

**Immature and adult** - Nymphs are amber to dark brown to black in colour; winged and wingless adults are dark brown to black. It is the only dark-coloured aphid attacking sweet cherry.



*Black cherry aphid colony on sweet cherry leaf*

### **Life History**

The black cherry aphid overwinters as eggs on the bark or buds. Eggs hatch just before bud break in the spring. After several generations feeding on leaves, winged adults migrate to summer hosts (plants of mustard family). Few if any aphids remain on trees after mid-summer. Winged adults return to cherry in the fall where they mate and lay overwintering eggs.

### **Monitoring**

Examine trees during and shortly after bud break for presence of black cherry aphids.

### **Control**

**Biological** – Several species of predatory insects and parasitic wasps attack black cherry aphids. Dormant oil sprays have the least impact on these biocontrol agents.

**Chemical** - There is no treatment threshold established for black cherry aphid. A delayed dormant oil application, or diazinon or an endosulfan product between green tip to pink, should prevent post-bloom problems. Diazinon, Cygon/Lagon or Alias/Admire applied to control cherry fruit fly will also control black cherry aphid. Malathion can be applied post-bloom, however the aphids are much more difficult to control once the leaves have curled.

<b>Timing</b>	<b>Products</b>
Green Tip to Pink	Diazinon, Thionex, Beleaf, Closer
Summer	Movento, Beleaf, Clutch, Closer, Actara, Diazinon, Malathion, Thionex, Purespray Green Spray Oil 13E

# Green Peach Aphid (*Myzus persicae*) and Black Peach Aphid (*Brachycaudus persicae*)

## Hosts

Green peach and black peach aphids mainly attack peach; however, apricot, plum, cherry and other trees may be attacked. Green peach aphid also attacks a wide variety of vegetable and floricultural crops.

## Damage

**Green peach aphid** - infestations on blossoms and new shoots cause flowers and leaves to curl tightly and shoots to stop growing. Fruitlets may not develop or may drop; young peaches may be deformed and nectarines may be deformed and streaked with russet.

**Black peach aphid** - main damage is slowing growth of young trees and predisposing to attack by other insects and diseases and to damage by harsh weather conditions. Early summer above ground damage is similar to green peach aphid. Sooty mold may develop where excessive honeydew is deposited on the fruit.



*Green peach aphids*

*Photo courtesy Agriculture & Agri-Food Canada*

## Identification

**Eggs** oval, shiny black

**Nymph** - Green peach aphid nymphs resemble wingless adults in colour but are smaller; black peach aphid nymphs are reddish-brown.

**Adult** - Green peach aphid: wingless forms are light green to yellow; winged forms are pale to dark green with a large dusky blotch on the abdomen.

Black peach aphid: both wingless and winged forms are shiny black in colour.

## Life History

**Green peach aphid** - overwinters as eggs on host trees, especially peach. Eggs hatch well before leaf bud burst; nymphs attack blossoms then growing shoots and leaves. After 2-3 generations, winged forms emigrate in June to produce several generations on summer hosts. In the fall, winged forms return to the spring hosts to lay overwintering eggs.

**Black peach aphid** – overwinters as wingless adults on roots of host trees. Some adults move up trees to establish colonies on leaves and shoots which usually disappear by midsummer. After several generations, winged adults fly to new host trees. Aphid colonies are present year round on roots of host trees.

### **Monitoring**

Inspect trees before bud burst for aphids on emerging leaves.

### **Control**

**Biological** - Preserve the many predatory insects that feed on aphids by avoiding use of harmful chemicals where possible.

### **Chemical** -

<b>Timing</b>	<b>Products</b>
Husk Fall	Admire, Beleaf, Closer, Exirel
Summer	Admire, Clutch, Closer, Beleaf, Movento, Thionex, Purespray Green Spray Oil 13E, Exirel, TwinGuard

Do not apply Admire more than 2 times per season, and only after bees are no longer foraging in the orchard. Movento should be applied in combination with a recommended non-ionic adjuvant (e.g. Agral 90). Do not tank mix Exirel with Flint, Pristine, Cabrio, Copper or Captan fungicides. Do not use Purespray Green Spray Oil 13E within 14 days before or after captan or sulphur applications. Dormant oil application before bud burst still provides adequate control when applied in sufficient water to ensure thorough coverage. Sprays applied for green peach aphid will also control black peach aphid.